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## Patent Office of the People's Republic of China

Address : Receiving Section of the Chinese Patent Office, No. 6 Tucheng Road West, Haidian District, Beijing, Postal code: 100088

Applicant	NOKIA CORPORATION		Seal of Examiner	Date of Issue
Agent	China Patent Agent (H.K.) Ltd.			December 5, 2003
Patent Application No.	01809019.2	Application Date	May 2, 2001	Exam. Dept.
Title of Invention	REMOVABLE HOUSING COVER FOR A PORTABLE RADIO COMMUNICATION DEVICE			

***First Office Action***

(PCT application entering into the national phase)

1.  Under the provision of Art. 35, para. 1 of the Patent Law, the examiner has made an examination as to substance of the captioned patent application for invention upon the request for substantive examination filed by the applicant on \_\_\_\_\_.
  
- Under the provision of Art. 35, para. 2 of the Patent Law, the Chinese Patent Office has decided to conduct an examination of the captioned patent application for invention on its own initiative.
  
2.  The applicant requests that  
 the filing date May 5, 2000 at the GB Patent Office be taken as the priority date of the present application,  
 the filing date \_\_\_\_\_ at the \_\_\_\_\_ Patent Office be taken as the priority date of the present application,  
 the filing date \_\_\_\_\_ at the \_\_\_\_\_ Patent Office be taken as the priority date of the present application.
  
3.  The following amended documents submitted by the applicant cannot be accepted for failure to conform with Art. 33 of the Patent Law:  
 the Chinese version of the annex to the international preliminary examination report.  
 the Chinese version of the amended documents submitted according to the provision of Rule 19 of the Patent Cooperation Treaty.  
 the amended documents submitted according to the provision of Rule 28 or Rule 41 of the Patent Cooperation Treaty.

the amended documents submitted according to the provision of Rule 51 of the Implementing Regulations of the Patent Law.

See the text portion of this Office Action for detailed reasons why the amendment cannot be accepted.

4.  Examination is conducted on the Chinese version of the initially-submitted international application.

Examination is conducted on the following document(s):

page \_\_\_\_\_ of the description, based on the Chinese version of the initially-submitted international application documents;

page \_\_\_\_\_ of the description, based on the Chinese version of the annex to the international preliminary examination report;

page \_\_\_\_\_ of the description, based on the amended documents submitted according to the provision of Rule 28 or Rule 41 of the Patent Cooperation Treaty;

page \_\_\_\_\_ of the description, based on the amended documents submitted according to the provision of Rule 51 of the Implementing Regulations of the Patent Law.

claim(s) \_\_\_\_\_, based on the Chinese version of the initially-submitted international application documents;

claim(s) \_\_\_\_\_, based on the Chinese version of the amended documents submitted according to the provision of Rule 19 of the Patent Cooperation Treaty;

claim(s) \_\_\_\_\_, based on the Chinese version of the annex to the international preliminary examination report;

claim(s) \_\_\_\_\_, based on the amended documents submitted according to the provision of Rule 28 or Rule 41 of the Patent Cooperation Treaty;

claim(s) \_\_\_\_\_, based on the amended documents submitted according to the provision of Rule 51 of the Implementing Regulations of the Patent Law.

Fig(s) \_\_\_\_\_, based on the Chinese version of the initially-submitted international application documents;

Fig(s) \_\_\_\_\_, based on the Chinese version of the annex to the international preliminary examination report;

Fig(s) \_\_\_\_\_, based on the amended documents submitted according to the provision of Rule 28 or Rule 41 of the Patent Cooperation Treaty;

Fig(s) \_\_\_\_\_, based on the amended documents submitted according to the provision of Rule 51 of the Implementing Regulations of the Patent Law.

5.  The following reference document(s) is/are cited in this Office Action (its/their serial

number(s) will continue to be used in the subsequent course of examination):

Serial No.	Number or Filing(s) of Document(s)	Date of Publication
		(or filing date of inter partes application)
1	CN1220060A	Date June 16, 1999
2		Date
3		Date
4		

6. Concluding comments on the examination:

On the description:

- What is stated in the application comes within the scope of that no patent right shall be granted as prescribed in Art. 5 of the Patent Law.
- The description is not in conformity with the provision of Art. 26, para. 3 of the Patent Law.

On the claims:

- Claim(s) \_\_\_\_\_ come(s) within the scope of that no patent right shall be granted as prescribed in Art. 25 of the Patent Law.
- Claim(s) 1-4, 7, 11, 14, 15 has/have no novelty as prescribed in Art. 22, para. 2 of the Patent Law.
- Claim(s) 5, 6, 8, 9, 12, 13, 16 has/have no inventiveness as prescribed in Art. 22, para. 3 of the Patent Law.
- Claim(s) \_\_\_\_\_ has/have no practical applicability as prescribed in Art. 22, para. 4 of the Patent Law.
- Claim(s) \_\_\_\_\_ is/are not in conformity with the provision of Art. 26, para. 4 of the Patent Law.
- Claim(s) \_\_\_\_\_ is/are not in conformity with the provision of Art. 31, para. 1 of the Patent Law.
- Claim(s) 6, 10 is/are not in conformity with the provisions of Rules 20 to 23 of the Implementing Regulations.
- Claim(s) \_\_\_\_\_ is/are not in conformity with the provision of Art. 9 of the Patent Law.
- Claim(s) \_\_\_\_\_ is/are not in conformity with the provision of Rule 12, para. 1 of the Implementing Regulations.

See the text portion of this Office Action for detailed analysis of the above

concluding comments.

7. Based on the above concluding comments, the examiner deems that

- the applicant should make amendment to the application document(s) according to the requirements put forward in the text portion of this Office Action.
- the applicant should expound in his/its observations why the captioned patent application is patentable and make amendment to what is not in conformity with the provisions pointed out in the text portion of this Office Action, otherwise, no patent right shall be granted.
- the patent application contains no substantive content(s) for which a patent right may be granted, if the applicant has no sufficient reason(s) to state or his/its stated reason(s) is/are not sufficient, said application will be rejected.
- 

8. The applicant should note the following items:

- (1) Under Art. 37 of the Patent Law, the applicant should submit his/its observations within four months from the date of receipt of this Office Action; if, without any justified reason(s), the time limit for making written response is not met, said application shall be deemed to have been withdrawn.
- (2) The amendment made by the applicant to said application should be in conformity with the provision of Art. 33 of the Patent Law, the amended text should be in duplicate and its form should conform with the related provisions of the Guide to Examination.
- (3) If no arrangement is made in advance, the applicant and/or the agent shall not come to the Chinese Patent Office to have an interview with the examiner.
- (4) **The observations and/or amended text should be sent to the Receiving Section of the Chinese Patent Office by mail or by personal delivery, if not sent to the Receiving Section by mail or by personal delivery, the document(s) will have no legal effect.**

9. This Office Action consists of the text portion totalling 4 page(s) and of the following attachment(s):

- 1 copy(copies) of the reference document(s) totalling 10 page(s).

Examination Dept. No. \_\_\_\_\_  
9016

Examiner \_\_\_\_\_

Your Ref: PAT 00034 CN (NC 32046)

Our Ref: CPME0242940P

### Text of the First Office Action

As stated in the description, the present application relates to a removable housing cover for a portable radio communication device. Upon examination, the Examiner's comments are hereby made as follows:

1. Claim 1 claims a removable housing cover adapted to be detachably connectable to a portable radio communication device. Reference document 1 (CNJ220060A) (see line 28, page 2 to line 25, page 7 of the description and Figs.1-3 and 6-9) has disclosed an interchangeable front cover (44) detachably connectable to a mobile telephone (10), wherein said front cover has a program selector (60, equivalent to the identity means in said claim) associated therewith; said mobile telephone comprises a detection circuit (50) serving as a sensor for sensing the program selector of the cover, and a microprocessor (12) for controlling the operating characteristics of said telephone; when said cover is mounted on the mobile telephone, said sensor senses said program selector and transmits the sensed data to the microprocessor, thereby said processor is enabled to determine the selected program configuration so as to change some selected operating characteristics of the mobile telephone by using the configuration signals read from the detection circuit (50). Thus, it can be seen that the technical solution disclosed in reference document 1 is slightly different from that claimed in claim 1 in expression, but they are the same in substance. Besides, they are of the same technical field, intended to solve the same technical problem and capable of producing the same technical effect. Therefore, claim 1 is contrary to the provision on novelty of Article 22, para. two, of the Patent Law.

2. The additional technical features of claim 2 have been disclosed in reference document 1 (see lines 11-19, page 3 and lines 23-27, page 5 of the description), wherein the program memory (14) of the mobile telephone (10) stores a control program having different program configurations corresponding to each available model; said microprocessor (12) is operable to change the operating characteristics of the mobile telephone by looking up and selecting a pre-stored configuration value in

an index table stored in the program memory (14) in accordance with the parameter obtained from the program selector. Thus, it can be seen that the technical solution disclosed in reference document 1 is slightly different from that claimed in claim 2, but they are the same in substance. Therefore, claim 2 is contrary to the provision on novelty of Article 22, para. two, of the Patent Law.

3. The additional technical features of claim 3 have been disclosed in reference document 1 (see lines 11-25, page 3 of the description), wherein said program selector causes the microprocessor to change the operating characteristics of said telephone by selecting a plurality of program configurations pre-stored in the mobile telephone. Thus, it can be seen that the technical solution disclosed in reference document 1 is slightly different from that claimed in claim 3, but they are the same in substance. Therefore, claim 3 is contrary to the provision on novelty of Article 22, para. two, of the Patent Law.

4. The additional technical features of claim 4 have been disclosed in reference document 1 (see lines 11, page 3 to line 10, page 4 of the description), wherein said program selector is provided with a plurality of pre-defined configurations for the mobile telephone; said detection circuit also has a series of contacts (52) for reading the corresponding configurations, whereby the microprocessor is enabled to change the operating characteristics of the mobile telephone by selecting one or more of the configurations. Thus, it can be seen that the technical solution disclosed in reference document 1 is slightly different from that claimed in claim 4, but they are the same in substance. Therefore, claim 4 is contrary to the provision on novelty of Article 22, para. two, of the Patent Law.

5. The additional technical features of claim 5, the publicly known knowledge in the art, are technical means commonly used by those skilled in the art. Therefore, said claim 5 does not possess any prominent substantive features, nor represent a notable progress, so said claim is contrary to the provisions of Article 22, para. three, of the Patent Law.

6. The additional technical features of claims 6 and 10 are not further definitions to the claimed removable housing cover in structure. Therefore, the scopes of protection of said claims have been rendered unclear, so said claims are contrary to

the provisions of Rule 20, para. one, of the Implementing Regulations of the Patent Law.

7. The additional technical features of claim 7 have also been disclosed in reference document 1, wherein (see lines 20-31, page 3 of the description) said program selector comprises a jumper pin (64, equivalent to the mechanical pegs in the claim), while the detection circuit serving as sensor comprises a series of contacts (52) corresponding to four possible pin positions. Therefore, claim 7 is contrary to the provision on novelty of Article 22, para. two, of the Patent Law.

8. The additional technical features of claims 8 and 9 are of the publicly known knowledge. To adopt other usable forms as the distinguishing identity means and to apply related detection devices are technical means commonly used by those skilled in the art. Therefore, claims 8 and 9 do not possess any prominent substantive features, nor represent a notable progress, so said claims are contrary to the provisions of Article 22, para. three, of the Patent Law.

9. Claim 11 claims a housing cover. Reference document 1 (CN1220060A) (see line 28, page 2 to line 25, page 7 of the description and Figs.1-3, 6 and 8) has also disclosed a cover (44), wherein it comprises an attaching means for detachably attaching the cover to the mobile telephone (10); a program selector (60) such that when the cover is mounted on the mobile telephone, the program selector is coupled with the detection circuit (50) serving as a sensor, wherein the internal functionality of the telephone is dependent on the program selector. Thus, it can be seen that the technical solution disclosed in reference document 1 is slightly different from that claimed in claim 11, but they are the same in substance. Besides, these two technical solutions are of the same technical field, intended to solve the same technical problem and capable of producing the same technical effect. Therefore, claim 11 is contrary to the provision on novelty of Article 22, para. two, of the Patent Law.

10. The additional technical features of claims 12 and 13 have been disclosed in reference document 1 (see line 28, page 2 to line 25, page 7 of the description), wherein the quantity and positions of the jumper pins on the program selector reflect the corresponding special program configurations such that mounting the cover on a telephone changes the program configurations of the telephone in accordance with the

related configurations; the cover in use is located on the telephone and controls the operating characteristics of the telephone so as to be set to the corresponding program configurations. Thus, it can be seen that the technical solutions claimed in claims 12 and 13 are different from that disclosed in reference document 1 in that what is changed in claims 12 and 13 is the Profiles setting of an operation state, but what is changed in reference document 1 are the different program configurations corresponding to different models. However, these different program configurations can also include a Profiles setting. That is to say, the different Profiles settings are realized by different programs. Besides, to edit the different Profiles settings in a program is easy to do and conceive of on the basis of reference document 1 as far as those skilled in the art are concerned. Therefore, said features fail to make any contribution to inventiveness of said claims. Therefore, claims 12 and 13 do not possess any prominent substantive features, nor represent a progress, so said claims are contrary to the provisions of Article 22, para. three, of the Patent Law.

11. The additional technical features of claim 14 have been disclosed in reference document 1, wherein (see Figs. 6 and 8) it is shown in Figs. 6 and 8 that the quantities of function keys on the interchangeable covers are not uniform, so the covers can be differentiated from one another; besides said interchangeable cover covers all of the telephone. Therefore, when claim 1 to which claim 14 refers does not possess novelty, claim 14 does not possess novelty, either, so claim 14 is contrary to the provisions of Article 22, para. two, of the Patent Law.

12. Claim 15 claims a portable radio communication device having a removable housing cover. Reference document 1 (CN1220060A) has disclosed a mobile telephone (10) having an interchangeable cover (44) comprising a detection circuit (50) serving as a sensor; a microprocessor (12) for processing the operating characteristics of the telephone, wherein said interchangeable cover comprises a program selector (60, equivalent to the identity means in the claim); the interchangeable cover is configured to be mounted on and attached to the telephone, in which arrangement the detection circuit of the mobile telephone is operable to sense the program selector and transmit the sensed characteristic parameter to the microprocessor, such that the microprocessor is controlled to alter the operating characteristics in accordance with the sensed feature of the program selector. Thus, it

can be seen that the technical solution disclosed in reference document 1 is slightly different from that claimed in claim 15, but they are the same in substance. Besides, these two technical solutions are of the same technical field, intended to solve the same technical problem and capable of achieving the same technical effect. Therefore, claim 15 is contrary to the provision on novelty of Article 22, para. two, of the Patent Law.

13. The additional technical features of claim 16 have been disclosed in reference document 1 (see line 28, page 2 to line 25, page 7 of the description), wherein said mobile telephone includes a plurality of pre-defined operating characteristics each of said operating characteristics being associated with the program configurations of telephones of different models, and wherein a plurality of interchangeable covers are associated with respective special programs, such that installation of an interchangeable cover on the mobile telephone activates the corresponding program configurations. Thus, it can be seen that the technical solution claimed in claim 16 is different from that disclosed in reference document 1 in that what is changed in claim 16 is the Profiles setting of the operation state, but what are changed in reference document 1 are different special program configurations corresponding to different models. However, such different program configurations can also include a Profiles setting. That is to say, different Profiles settings are realized by different programs. Besides, to edit such different Profiles settings in a program so as to realize different settings is easy to do and conceive of on the basis of reference document 1 as far as those skilled in the art are concerned. Therefore, said features fail to make any contribution to inventiveness of said claim. Therefore, claim 16 do not possess any prominent substantive features, nor represent a progress, so said claim is contrary to the provisions of Article 22, para. three, of the Patent Law.

For the above reasons, neither the dependent claims nor the dependent claims thereof possess inventiveness. Besides, the description fails to state any other substantive contents that can be granted the patent right. The applicant should present sufficient reasons indicating that the present application possesses inventiveness within the four-month time limit prescribed herein; otherwise, the present application will rejected.

[19]中华人民共和国国家知识产权局

[51]Int.Cl<sup>6</sup>

H04B 1/38

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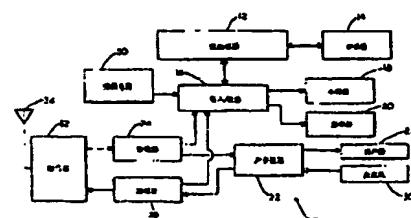
[72]发明人 克雷格·安德鲁斯

权利要求书4页 说明书7页 附图页数7页

[54]发明名称 对无线移动通信设备自动配置控制程序的方法和设备

## [57]摘要

一种移动电话有一个可编程控制器控制该移动电话的工作。该可编程控制器有多个可供选择的程序配置。该移动电话的可互换元件如外壳的前盖，包括一个程序选择器以表征选定的程序结构。一个检测电路检测程序选择器并产生一个配置信号代表选定的程序结构。可编程控制器响应检测电路产生的配置信号，根据选定的程序配置来配置控制程序。



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信号代表选定的程序结构。可编程控制器响应来自检测电路的配置信号，根据选定的程序结构来配置控制程序。

5 程序选择器允许通过简单地互换一个零件，比如无线移动通信设备的前盖，来改变设备的程序结构。这种互换性简化了生产并给商品管理提供了更大的灵活性。生产被简化是因为对多种不同型号仅需要一种电路板结构。商品管理更加灵活是因为零件可简单地互换，而无需对电话进行重新编程以更快响应客户需求的变化。

10 图 1 是一个框图，说明了按照本发明制造的移动电话的总体结构。  
图 2 是一个说明按照本发明制造的移动电话的分解视图。  
图 3 是一个移动电话前盖内侧的视图，示出了程序选择器。  
图 4 用一个示意图说明了在本移动电话内使用的检测电路的一个实施例。

15 图 5 用一个示意图说明了在移动电话内使用的检测电路的又一实施例。

图 6 用一个正视图说明了和第一实施例相对应的移动电话的前盖。

图 7 示意说明了图 6 中前盖的跳线。

图 8 用一个正视图说明了和第二实施例相对应的移动电话的前盖。

图 9 示意说明了图 8 中前盖的跳线。

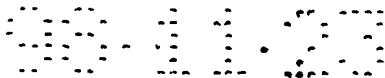
20 图 10 用一个俯视图说明了图 6 至图 8 中带有本前盖的移动电话所使用的印刷电路板。

图 11 用一个流程图说明了微处理器的例行程序结构。

25 根据上述附图描述本发明的一个优先实施例。但是，可以理解的是，本发明可以有多个实施例而不局限于这里描述的实施例。

30 图 1 是一个框图，说明了按照本发明制造的移动电话的总体结构，并用数字 10 代表本移动电话。移动电话 10 包括一个微处理器 12 用来控制移动电话 10 的工作，和一个存储器 14 用来存储移动电话 10 所使用的程序。输入输出电路 16 将小键盘 18，显示屏 20，声音处理电路 22，接收器 24，发送器 26 和微处理器 12 相连。声音处理电路 22 向扬声器 28 提供基本的模拟声音输出，并接收麦克风 30 的模拟声音输入。常规信号组合器 32 允许通过共用天线 34 进行双向通信。

35 根据图 2，这是一个移动电话 10 的分解示意图。移动电话 10 包括外



壳 40，它由后盖 42 和前盖 44 组成。移动电话 10 的前盖 44 装有小键盘 18，显示屏 20，扬声器 28，麦克风 30 和天线接头。后盖 42 通常包括电池组插座（图中未表示出来）。外壳 40 内有印刷电路板 46。印刷电路板 46 上有微处理器 12，程序存储器 14，输入\输出电路 16，声音处理电路 22，接收器 24，发送器 26，信号组合器 32。

多数移动电话厂商提供多个型号的移动电话，每种型号有不同的特点和功能。例如，不同型号的移动电话可能有不同的小键盘 18 或显示屏 20。可能有很多的软件选择，最贵的型号提供最多的功能选择。

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为简化多种不同型号的移动电话的生产，本发明的移动电话 10 在多种不同型号里使用通用印刷电路板结构。这些不同型号的移动电话有可互换的前盖 44。印刷电路板 46 有每种型号所必需的全部电路。另外，程序存储器 14 存储控制程序，该程序对应每种型号有不同的程序结构。前盖 44 上有一个程序选择器 60，印刷电路板 46 上的检测电路 50 检测程序选择器 60（见图 4 和图 5）。检测电路 50 产生一个配置信号，它告诉微处理器 12 将使用哪个程序结构。这样，目前的发明就提供一种方法和设备以通过互换前盖 44 来自动配置控制程序。

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图 3 展示了程序选择器 60 的实施例。在本发明所公开的实施例中，程序选择器 60 的跳线连向前盖 44 的内侧。跳线包括跳线座 62，它最好有绝缘性能良好的弹性材料制成。在本发明所公开的实施例中，跳线座 62 有针孔，可以容纳多达 4 个跳线插头 64，这些插头由导电元件 66 相连。不同型号的电话对跳线插头 64 的安排不同。跳线插头 64 的个数和位置反映了对应于该型号的特定程序结构。

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图 4 展示了检测电路 50 的实施例。检测电路 50 检测跳线 60 上的跳线插头 64，并产生配置信号或代表选定的程序结构的信号，这些信号与移动电话 10 的特定型号相对应。检测电路 50 包括一系列触点 52，这些触点如图 2 所示，显露在印刷电路板 46 的表面上。在图示的实施例中，共有四个触点 52，它们对应于跳线 60 上的四个可能的插头位置。四个触点 52 中的 3 个（标有 C1 - C3），通过上拉电阻 R<sub>1</sub> - R<sub>3</sub> 连向电压 V<sub>s</sub>，分别输出电压 V<sub>1</sub> - V<sub>3</sub>。第四个触点 52（标有 C<sub>G</sub>）接地，被称作接地触点。通常情况下，上拉电阻 R<sub>1</sub> - R<sub>3</sub> 保持各自的输出电压 V<sub>1</sub> - V<sub>3</sub> 为高。当触点 C1 - C3 连向接地触点 C<sub>G</sub> 时，通过上拉电阻 R<sub>1</sub> - R<sub>3</sub> 的电源电压降低，从而引起了输出电压 V<sub>1</sub> - V<sub>3</sub> 降低。输出电压 V<sub>1</sub> - V<sub>3</sub> 通过输入\输出电路

16 连向微处理器 12。输出电压  $V_1 - V_3$  的状态代表着选定的程序结构。配置信号用来配置微处理器 12 所使用的控制程序，以控制移动电话 10 的工作。

5 当组装移动电话 10 时，跳线 60 上的跳线插头 64 接向印刷电路板上对应的触点 52。有一个跳线插头 64 接向接地触点  $C_0$ ，其余的跳线插头接向选定的触点  $C_1 - C_3$ 。和跳线插头 64 相连的触点  $C_1 - C_3$  的输出电压  $V_1 - V_3$  降成低电平，而没有和跳线插头相连的触点保持高电平。可能的输出电压组合等于  $2^3$ ，其中，N 为除掉接地触点之外的触点总数。图示的四插头指示器允许 8 种不同的电压组合，因而可表示 8 种不同的型号。

10 15 图 5 是检测电路 50 的另一实施例。图 5 中的检测电路 50 使用了一个串联电路而不是一个并联电路。触点  $C_1 - C_3$  通过电阻  $R_1 - R_4$  连接到电源电压  $V_3$ 。电阻  $R_1 - R_3$  相互并联，然后和  $R_4$  串联。图 5 中的检测电路 50 产生一个输出电压信号  $V_{out}$ 。检测电路 50 产生的输出电压  $V_{out}$  将随着跳线插头 64 和触点  $C_1 - C_3$  的连接而发生变化。下面的表 1 给出了对于 8 种不同的连接检测电路 50 的输出电压。这里假设：电源电压 4V，阻值分别为  $R_1 = 500 \Omega$ ； $R_2 = 1500 \Omega$ ； $R_3 = 5000 \Omega$ ； $R_4 = 700 \Omega$ 。在表 1 中，数字“1”代表触点和跳线插头 64 相连。

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表 1 串联探测电路的输出电压

输入	$C_1$	$C_2$	$C_3$	输出电压 $V_{out}$
0	0	0	0	4
1	0	0	1	3.509
2	0	1	0	2.727
3	0	1	1	2.49
4	1	0	0	1.667
5	1	0	1	1.575
6	1	1	0	1.395
7	1	1	1	1.33

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图 5 所示的串联检测电路 50 的主要优点是，在 I/O 芯片上它只需要一个针脚，而图 4 所示的并联检测电路对应于  $2^n$  种连接，则需要 n 个针脚。但是，串联检测电路需要模数转换，以将配置信号变成微处理器 12 的可

读信号。应用并联检测电路还是串联检测电路依赖于移动电话 10 的结构。

本发明所公开的实施例利用跳线和印刷电路板 46 上的触点相连，这一点很容易和普通技术中其它的检测电路相区分。概括地说，本发明利用某种形式的检测装置，它和微处理器 12 相连以检测移动电话 10 的可互换零件的状态。检测的状态例如可能是，外壳 40 或其它可互换零件的机械结构，磁场特性，光学特性，声学特性或其它电学特性。该检测装置可能包括机械开关，光学传感器，声音传感器，或其它能产生电信号的传感器。这样的列举并不详尽，它仅仅说明实现本发明可能有多种不同的方法。

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为应用本发明，印刷电路板 46 上包括有每种型号所必需的元件和电路。例如，如果不同型号的移动电话使用不同类型的小键盘，那么，印刷电路板 46 将包括每种不同型号小键盘的电路。同样，如果不同型号使用不同的显示屏，那么，印刷电路板 46 将需要驱动每种显示屏 20 的电路。控制每种移动电话的控制程序写进程序存储器 14。程序存储器 14 的一部分用来存储每种不同型号的控制程序的配置数据。下面的表 2 是一个查阅表的例子，表中，六种不同程序结构的配置数据对应于六种不同的型号。但移动电话 10 通电时，微处理器 12 利用查阅表存储的配置数据执行配置程序以配置对于选定型号的移动电话的控制程序。

表 2 程序结构查阅表

结构值	键盘类型	声学分度	存储器位置	警报特性	用户存储器	重拨
1	Map A	G=20	30	否	否	否
2	Map B	G=21	30	否	否	是
3	Map C	G=18	30	否	是	是
4	Map A	G=20	75	否	是	是
5	Map B	G=21	90	是	是	是
6	Map C	G=18	106	是	是	是

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图 11 是一个流程图，说明了微处理器 12 执行配置程序的过程。每当打开移动电话 10，配置程序执行一次。微处理器 12 先从检测电路 50 读入配置信号，然后利用配置信号确定选定的程序结构。例如，可通过在程序存储器 14 里存储的指示表来查阅结构值，以确定程序结构。表 3 是指示表的一个代表性的例子，它显示出了每种程序结构及其对应的结构值。第一栏代表来自图 4 所示电路的配置信号值。这里的“1”还代表触点和跳



线插头 64 相连，这将产生一个逻辑低电平。

表 3 指示表

编译信号	结构	结构值
001	A 型 基本型	1
010	B 型 基本型	2
011	C 型 基本型	3
100	A 型 增强型	4
101	B 型 增强型	5
110	C 型 增强型	6

5 确定了程序结构以后，微处理器 12 从程序存储器 14 中存储的程序结构表里查出和选定的结构相对应的配置数据。然后，配置数据被存储在临时存储单元中，比如，微处理器 12 使用的随机存储器（图中未示出）。另一方面，指示表也可能包含指向程序存储器 14 某段的地址，在这个地址内包含有对应于选定的程序结构的配置数据。可以利用这个地址，在临时存储器内确定一个指针指向配置数据，而不需要将配置数据传送到临时存储器内。后一种方法可能会更好一些，因为它利用了较少的存储空间。  
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图 6 至图 10 说明了移动电话 10 的两种不同型号的前盖 44。图 6 中的电话是 A 型基本型（见表 3），它包括 5 个功能键。图 7 用原理图说明了对于 A 型基本型移动电话，其跳线插头的位置。由图 7 可见，跳线插头 64 出现在接地点和第 3 点。由图 8 可见，B 型增强型电话有 6 个功能键。由图 9 可见，跳线 60 包括在接地点，第一点和第三点的插头。

20 图 10 给出了印刷电路板 46 的平面图，它可以与图 6 和图 8 中的前盖 42 的任一个连用。印刷电路板 46 包括多个键触点 48。键触点 48 可以和图 6 中的 6 个功能键或图 7 中的 5 个功能键一起工作。此外，印刷电路板 46 包括 4 个触点 52，这些触点和跳线 60 的四个插头相对应。当前盖 44 安装到位以后，跳线插头 64 和对应的触点 52 相接触。检测电路 50 的输出电压随安装的前盖 44 的不同而变化。  
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在初始化时，微处理器 12 从检测电路 50 读入配置信号，并在指示表中查阅结构值。对于 A 型基本型，结构值为 1。对于 B 型增强型，结构值为 5（见表 3）。利用结构值，微处理器从程序存储器 14 存储的结构表中

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查出结构。如果，使用图 6 中的前盖，微处理器 12 将下列配置数据写进临时存储器。

5            键盘类型 = MapA;  
          声学分度 = 20;  
          存储器位置 = 30;  
          警报特性 = 禁止;  
          用户存储器 = 禁止;  
          重拨 = 禁止。

10          另一方面，如果使用图 8 中的前盖，下列配置数据将被写进临时存储器：

15          键盘类型 = MapB;  
          声学分度 = 21;  
          存储器位置 = 90;  
          警报特性 = 启动;  
          用户存储器 = 启动;  
          重拨 = 启动。

20          微处理器 12 使用配置数据来控制移动电话的工作。键盘类型告诉微处理器，哪种键盘在使用，据此可使用合适的映射和键赋值。声学分度用来确定在声音处理电路 22 中的可编程的放大级数，因为，当前盖 44 互换时，电话的声学特性将发生微小变化。存储器位置告诉微处理器 12 存储器里的地址数以分配存储器存储电话号码。警报特性，用户存储器和重拨是可供选择的软件选项，它可以被启动或被禁止。

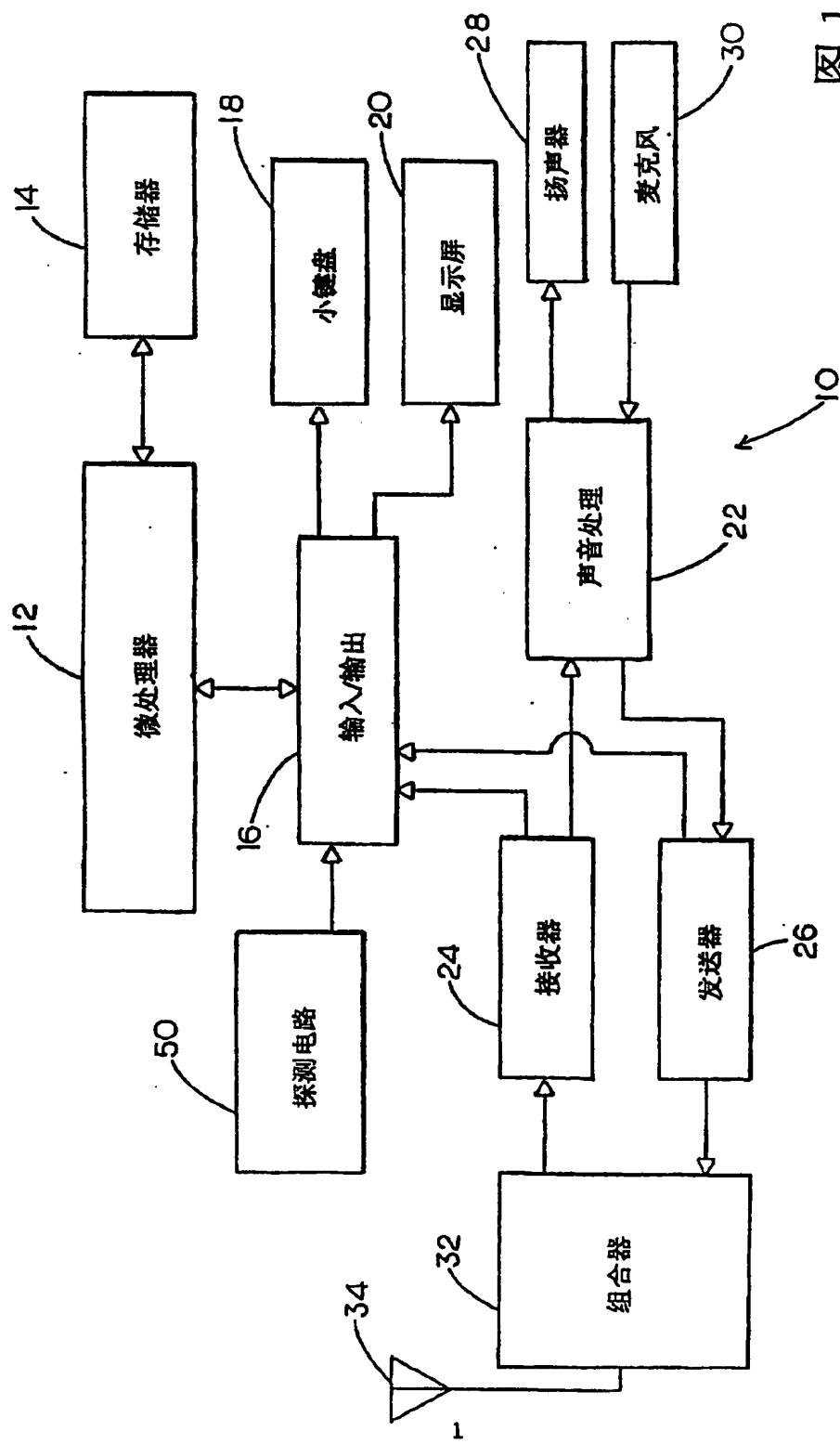
30          由上文所述，显然本发明提供了一种简便的方法，通过简单地互换前盖 44 或移动电话 10 的其它可互换零件，自动改变控制程序的程序结构。本发明给厂商管理商品提供了更多的柔性，它允许厂商对用户需求的波动作出更快的反应。

35          在不背离本发明的精神和实质特性的情况下，本发明可以，也当然能以其它不同于这里提出的方法执行。例如，按照发明制造的对流恒温箱样机的尺寸不包括在权利要求内，但仅作为例子提出。因此，本实施例在所有方面都是说明性的，而不是限制性的。所有在所附的权利要求范围内的变化都包括在本实施例内。

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说 明 书 图

图 1



98.11.20

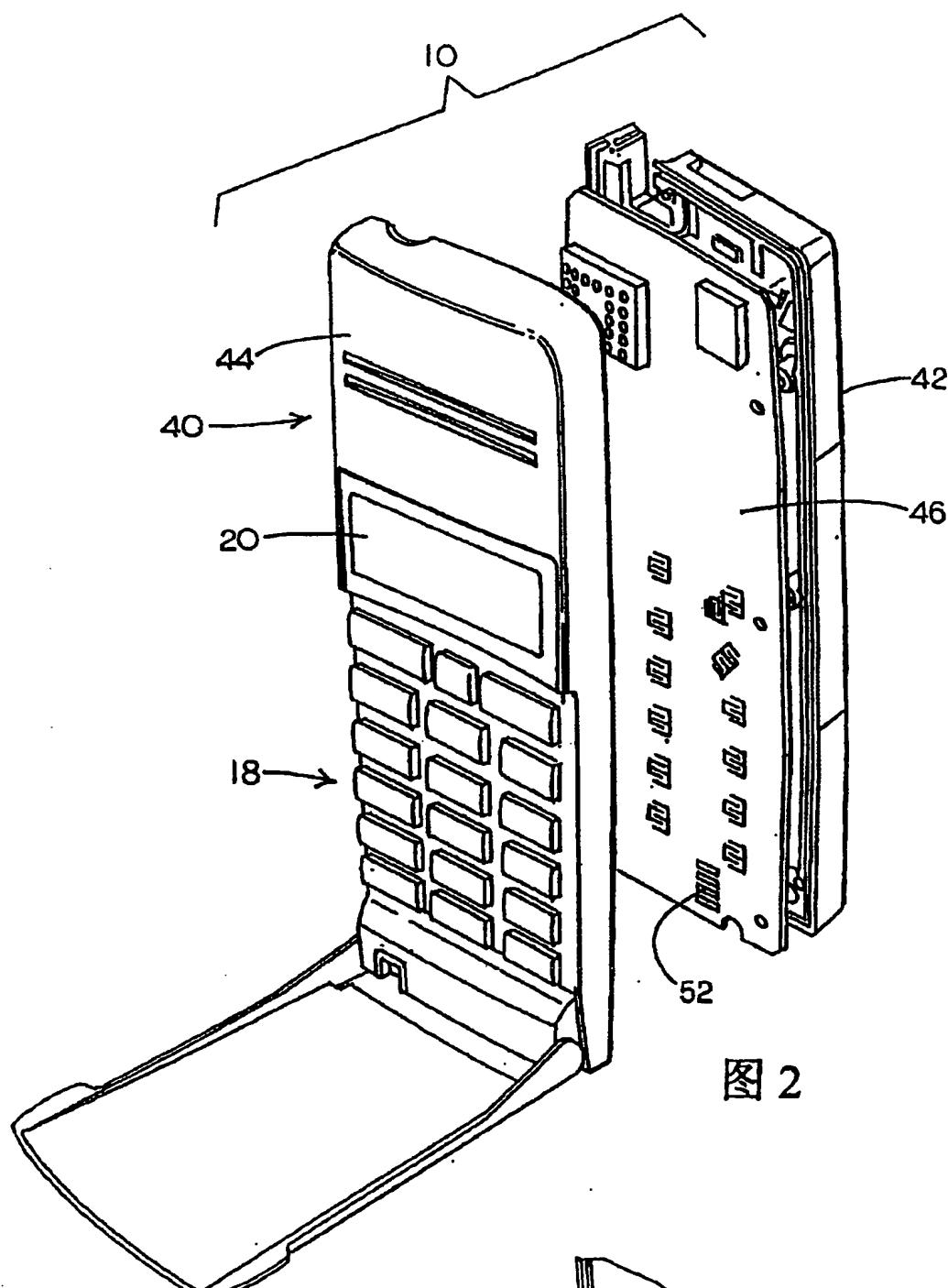


图 2

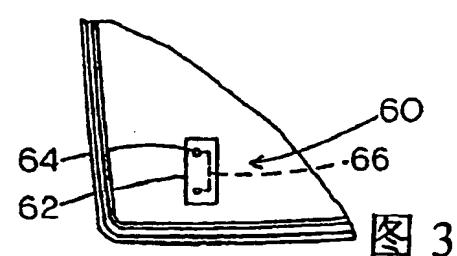


图 3

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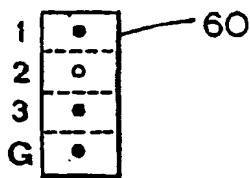


图 9

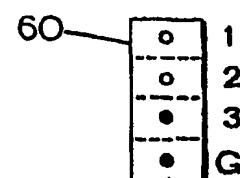


图 7

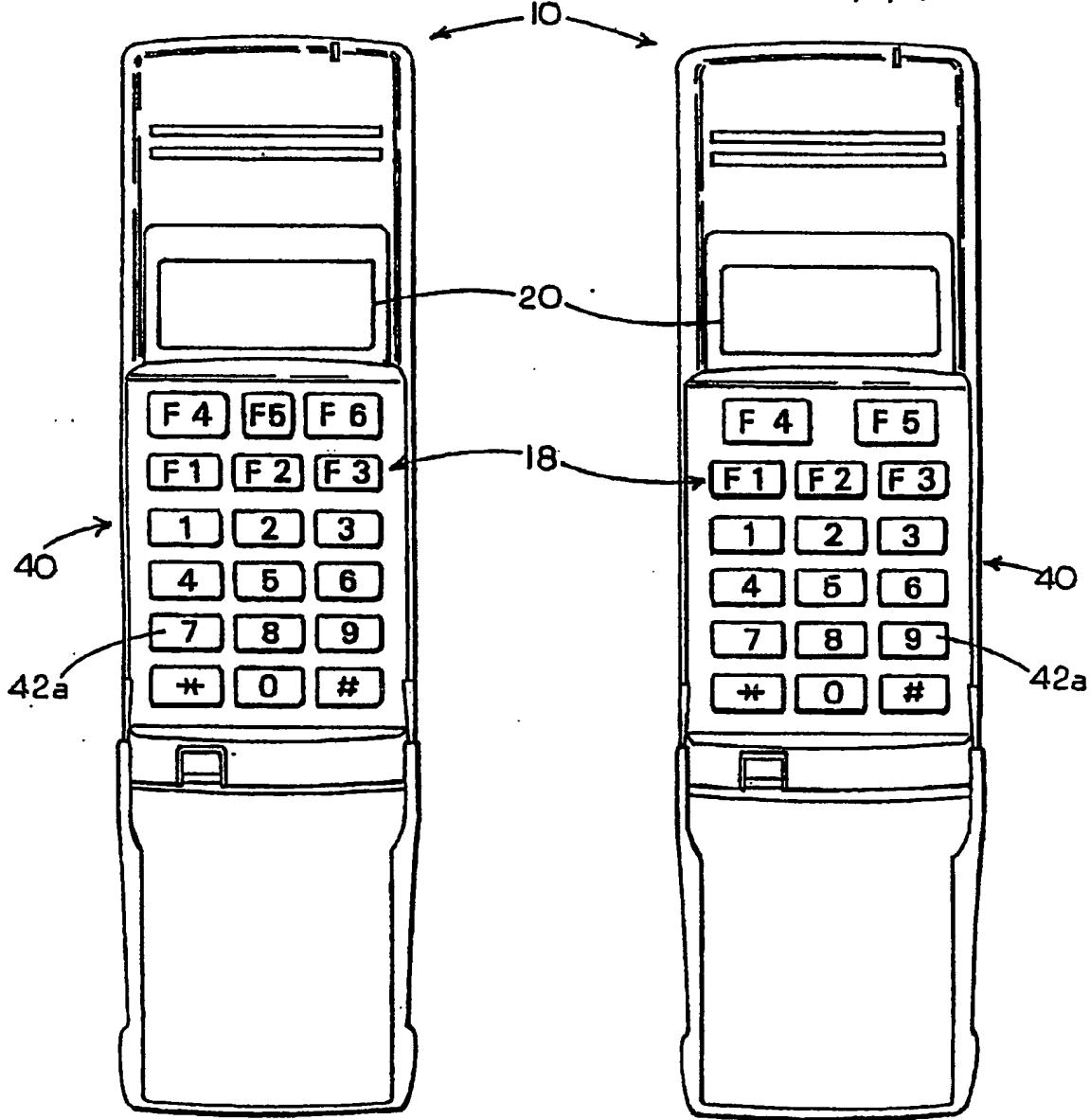


图 8

图 6